

IN THE CLAIMS

Claims 3-6 and 17 were rejected because of the following informalities:

In Claim 3, line 3, change "users" to --user-- after "said".

In Claim 17, line 3, change "the" to --a--.

The claims have been amended to correct the informalities.

Please amend the claims as follows:

1. (Cancelled) A multi-user detector comprising:

a channel estimator to estimate actual channel taps associated with users of interest based on a receive signal; and

a channel tap interpolator to generate interpolated channel taps for a first user of interest when at least one actual channel tap associated with said first user of interest occurs at a non-integer multiple of a chip period from a sampling reference point, said interpolated channel taps occurring at integer multiples of the chip period from the sampling reference point.

2. (Cancelled) The multi-user detector of claim 1, wherein:

said channel tap interpolator generates a set of interpolated channel taps for each actual channel tap associated with said users of interest that occurs at a non-integer multiple of a chip period from the sampling reference point.

3. (Currently Amended) ~~The multi-user detector of claim 1, comprising:~~ A multi-user detector comprising:

a channel estimator to estimate actual channel taps associated with users of interest based on a receive signal;

a channel tap interpolator to generate interpolated channel taps for a first user of interest when at least one actual channel tap associated with said first user of interest occurs at a non-integer multiple of a chip period from a sampling reference point, said interpolated channel taps occurring at integer multiples of the chip period from the sampling reference point; and

a virtual user definition unit to define a plurality of low dimensionality virtual users based on a recursive property of spreading sequences associated with said users user of interest, each low dimensionality virtual user having a number of associated subsymbols within a corresponding symbol period.

4. (Original) The multi-user detector of claim 3, comprising:

a spreading sequence interpolator to generate interpolated spreading sequences for low dimensionality virtual users based on interpolated channel taps.

5. (Original) The multi-user detector of claim 4, comprising:

an MMSE unit to generate individual de-spreading sequences corresponding to subsymbols of at least one virtual user of interest.

6. (Original) The multi-user detector of claim 5, comprising:

a combination unit to generate a de-spreading sequence for an actual user by combining individual de-spreading sequences generated by said MMSE unit.

7. (Cancelled) The multi-user detector of claim 1, wherein:

said channel tap interpolator includes an interpolation filter.

8. (Cancelled) The multi-user detector of claim 1, wherein:

said channel estimator estimates actual channel taps for at least one base station of interest, said at least one base station of interest being associated with at least one user of interest.

9. (Cancelled) A method for use in generating a de-spreading sequence for a desired user within a CDMA receiver, comprising:

estimating actual channel taps for users of interest based on a receive signal that includes code modulated signal components for multiple users, said code modulated signal components having overlapping frequency spectrums; and

generating interpolated channel taps for a user of interest when at least one actual channel tap associated with the user of interest occurs at a non-integer multiple of a chip period from a sampling reference point, said interpolated channel taps occurring at integer multiples of said chip period from said sampling reference point.

10. (Cancelled) The method of claim 9, wherein:

estimating actual channel taps for users of interest includes estimating actual channel taps for at least one base station of interest, said at least one base station of interest being associated with at least one user of interest.

11. (Cancelled) The method of claim 9, wherein:

generating interpolated channel taps includes using an interpolation filter.

12. (Cancelled) The method of claim 9, wherein:

generating interpolated channel taps includes generating a set of interpolated channel taps for each actual channel tap associated with said users of interest that occurs at a non-integer multiple of a chip period from the sampling reference point.

13. (Currently Amended)—~~The method of claim 9, further comprising:~~ A method for use in generating a de-spreading sequence for a desired user within a CDMA receiver, comprising:

estimating actual channel taps for users of interest based on a receive signal that includes code modulated signal components for multiple users, said code modulated signal components having overlapping frequency spectrums;

generating interpolated channel taps for a user of interest when at least one actual channel tap associated with the user of interest occurs at a non-integer multiple of a chip period from a sampling reference point, said interpolated channel taps occurring at integer multiples of said chip period from said sampling reference point; and

defining a plurality of low dimensionality virtual users based on a recursive property of spreading sequences associated with said users of interest, each low dimensionality virtual user having a number of associated subsymbols within a corresponding symbol period.

14. (Original) The method of claim 13, further comprising:

generating interpolated spreading sequences for virtual users based on said interpolated channel taps.

15. (Original) The method of claim 14, further comprising:

generating individual de-spreading sequences for subsymbols associated with at least one virtual user of interest using said interpolated spreading sequences.

16. (Original) The method of claim 15, wherein:

generating individual de-spreading sequences includes using MMSE techniques.

17. (Currently Amended) The method of claim 15, further comprising:

combining individual de-spreading sequences associated with said at least one virtual user of interest to generate a de-spreading sequence for ~~[[the]]~~ a desired user.

18. (Cancelled) A receiver system for use in a CDMA-based communication system, comprising:

a de-spreader to de-spread a receive signal using a de-spreading sequence associated with a desired user, said receive signal including code modulated signal components for multiple users that have overlapping signal spectrums; and

a de-spreading sequence determination unit to generate said de-spreading sequence, said de-spreading sequence determination unit including a channel tap interpolator to determine interpolated channel taps for a user of interest when at least one actual channel tap associated with the user of interest occurs at a non-integer multiple of a chip period from a sampling

reference point, wherein said interpolated channel taps occur at integer multiples of said chip period from the sampling reference.

19. (Cancelled) The receiver system of claim 18 wherein:
said channel tap interpolator includes an interpolation filter.

20. (Currently Amended) ~~The receiver system of claim 18 wherein:~~ A receiver system for use in a CDMA-based communication system, comprising:

a de-spreader to de-spread a receive signal using a de-spreading sequence associated with a desired user, said receive signal including code modulated signal components for multiple users that have overlapping signal spectrums;

a de-spreading sequence determination unit to generate said de-spreading sequence, said de-spreading sequence determination unit including a channel tap interpolator to determine interpolated channel taps for a user of interest when at least one actual channel tap associated with the user of interest occurs at a non-integer multiple of a chip period from a sampling reference point, wherein said interpolated channel taps occur at integer multiples of said chip period from the sampling reference; and

said de-spreading sequence determination unit further comprises a virtual user definition unit to define low dimensionality virtual users based on a recursive property of spreading sequences of said users of interest, said low dimensionality virtual users each having multiple subsymbols within a corresponding symbol period.

21. (Original) The receiver system of claim 20 wherein:

said de-spreading sequence determination unit further comprises a spreading sequence interpolator to generate interpolated spreading sequences for low dimensionality virtual users based on interpolated channel taps.

22. (Original) The receiver system of claim 21 wherein:

said de-spreading sequence determination unit further comprises an MMSE unit to generate individual de-spreading sequences for subsymbols of at least one virtual user of interest.

23. (Original) The receiver system of claim 22 wherein:

said de-spreading sequence determination unit further comprises a combination unit to combine individual de-spreading sequences generated by said MMSE unit to generate said de-spreading sequence for said desired user.

24. (Cancelled) The receiver system of claim 18 wherein:

said receiver system is located within a handheld communicator.

25. (Cancelled) The receiver system of claim 18 wherein:

said receiver system is located within a cellular base station.

26. (Cancelled) An article comprising machine-accessible media having associated data, wherein the data, when accessed, results in a machine for performing a method of generating a de-spreading sequence for a desired user in a CDMA system, said method comprising:

estimating actual channel taps for users of interest based on a receive signal that includes code modulated signal components for multiple users, said code modulated signal components having overlapping signal spectrums; and

generating interpolated channel taps for a user of interest when at least one actual channel tap associated with the user of interest occurs at a non-integer multiple of a chip period from a sampling reference point, said interpolated channel taps occurring at integer multiples of said chip period from said sampling reference point.

27. (Cancelled) The article of claim 26 wherein:

generating interpolated channel taps includes generating interpolated channel taps for each user of interest having at least one actual channel tap that occurs at a non-integer multiple of a chip period from the sampling reference point.

28. (Original) ~~The article of claim 27 wherein said method further comprises:~~ An article comprising machine-accessible media having associated data, wherein the data, when accessed,

results in a machine for performing a method of generating a de-spreading sequence for a desired user in a CDMA system, said method comprising:

estimating actual channel taps for users of interest based on a receive signal that includes code modulated signal components for multiple users, said code modulated signal components having overlapping signal spectrums;

generating interpolated channel taps for a user of interest when at least one actual channel tap associated with the user of interest occurs at a non-integer multiple of a chip period from a sampling reference point, said interpolated channel taps occurring at integer multiples of said chip period from said sampling reference point;

generating interpolated channel taps includes generating interpolated channel taps for each user of interest having at least one actual channel tap that occurs at a non-integer multiple of a chip period from the sampling reference point; and

defining a plurality of low dimensionality virtual users based on a recursive property of spreading sequences associated with said users of interest, each low dimensionality virtual user having a number of associated subsymbols within a corresponding symbol period.

29. (Original) The article of claim 28 wherein said method further comprises:

generating interpolated spreading sequences for low dimensionality virtual users based on said interpolated channel taps.

30. (Original) The article of claim 29 wherein said method further comprises:

generating individual de-spreading sequences for subsymbols associated with at least one low dimensionality virtual user of interest using said interpolated spreading sequences.

31. (Original) The article of claim 30 wherein said method further comprises:

combining individual de-spreading sequences associated with said at least one low dimensionality virtual user of interest to generate a de-spreading sequence for the desired user.